SECOND FIVE-YEAR REVIEW REPORT FOR DEPUE/NEW JERSEY ZINC/MOBIL CHEMICAL CORP. SUPERFUND SITE BUREAU COUNTY, ILLINOIS

Prepared by
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for
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6/24/2015
Date

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LIST OF ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CAMU	Corrective Action Management Unit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CRC	Community Relations Coordinator
E&E	Ecology & Environment
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
ICs	Institutional Controls
ICO	Interim Consent Order
ILCS	Illinois Compiled Statutes
Illinois EPA	Illinois Environmental Protection Agency
IWTP	Interim Water Treatment Plant
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU(s)	Operable Unit(s)
PM	Project Manager
PRPs	Potentially Responsible Parties
RAOs	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
UECA	Uniform Environmental Covenants Act
UU/UE	Unlimited Use and Unrestricted Exposure

EXECUTIVE SUMMARY

This is the second five-year review (FYR) for the DePue/New Jersey Zinc/Mobil Chemical Corp. Superfund site (Site) located in DePue, Bureau County, Illinois. The purpose of this FYR is to review information to determine if the remedy is and will continue to be protective of human health and the environment. The triggering action for this statutory FYR was the signing of the previous FYR on June 25, 2010.

The Site is located within the Village of DePue in Selby Township, Bureau County, Illinois, and encompasses approximately 950 acres, including the Village of DePue. The Site is divided into five distinct Operable Units (OUs): OU1, the South Ditch; OU2, the Phosphogypsum Stack; OU3, the Former Plant Site Area; OU4, Off-Site Soils; and OU5, Lake DePue (Figure 1).

On October 3, 2003, the Illinois Environmental Protection Agency (Illinois EPA) signed the Interim Record of Decision (ROD), with concurrence by the United States Environmental Protection Agency (EPA), for the OU1 South Ditch interim remedial action which is the subject of this FYR. The South Ditch is included within the floodplain of Lake DePue (OU5); it is anticipated that the Remedial Investigation and Feasibility Study (RI/FS) for Lake DePue will provide sufficient data and evaluation to select a final remedy for the South Ditch. Ultimately, the final remedy for the South Ditch will be integrated in the Lake DePue ROD. Illinois EPA finalized the Lake DePue RI report in July 2009 and the human health risk assessment in 2014. Additional sampling for Lake DePue is planned to support the ecological risk assessment.

The Phosphogypsum Stack (OU2) was under closure at the time the Site was listed on the National Priorities List (NPL). This closure was conducted pursuant to Illinois landfill regulations, and a ROD for OU2 is not anticipated. Institutional controls (ICs) are a component of the final closure, and will be addressed pursuant to Illinois' landfill regulations and IC regulations. Currently, the human health and ecological risk assessments for the Former Plant Site Area (OU3) are ongoing, and the remedy selection process for Off-Site Soils (OU4) is underway.

The 2003 interim remedy for the South Ditch concentrated on excavation and protective containment of highly mobile sediment known to include elevated concentrations of heavy metals. The metals-contaminated sediments were demonstrated to exhibit acute ecological toxicity to two test organisms and represented a human health risk primarily to the adolescent trespasser as determined in the screening risk assessment. The contaminated sediments were located in an extremely dynamic physical setting with the potential to migrate into Lake DePue.

Prior to implementation of the South Ditch remedy, the contaminated groundwater and surface water known to be the source of the metals-contaminated sediments was partially controlled and treated in an on-site Interim Water Treatment Plant (IWTP). The IWTP is fed by a lift station at the previous head of the South Ditch and is located on OU3.

The South Ditch interim remedy required the construction of a Corrective Action Management Unit (CAMU) to contain the sediments. First, the metals-contaminated sediments were stabilized with power plant combustion ash to fix the metals and provide physical stabilization, and stored

in the CAMU. The CAMU was designed to meet Resource Conservation and Recovery Act (RCRA) requirements as well as applicable or relevant and appropriate requirements (ARARs) and is located adjacent to the primary zinc smelter slag pile in OU3.

The interim remedy at the South Ditch is protective of human health and the environment in the short term because access is restricted by a fence and the metals-contaminated sediments that were removed are stored in a CAMU at OU3. In order for the remedy at the South Ditch to be protective in the long term, the remedy selection process for Lake DePue, OU5, must be completed and implemented. Additionally, a determination of the need for site ICs will be undertaken to ensure long-term protectiveness of human health and the environment. Illinois EPA, in consultation with EPA, will review the need for ICs during selection of the final remedy components.

If needed, Illinois EPA and EPA will require IC evaluation activities, an IC work plan for implementation and long-term stewardship, and a uniform environmental covenant pursuant to Illinois' Uniform Environmental Covenants Act (UECA). A site-wide protectiveness statement cannot be made at this time because remedy selection and remedial actions have not been initiated at all operable units.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: DePue/New Jersey Zinc/Mobil Chemical Corp.		
EPA ID: ILD062340641		
Region: 5	**State:** IL	**City/County:** DePue/Bureau

SITE STATUS	
NPL Status: Final	
Multiple OUs? Yes	**Has the site achieved construction completion?** No

REVIEW STATUS
Lead agency: State ***[If "Other Federal Agency", enter Agency name]*:** Illinois Environmental Protection Agency
Author name (Federal or State Project Manager): Charlene Falco
Author affiliation: Illinois Environmental Protection Agency
Review period: 4/4/2014 - 6/23/2015
Date of site inspection: 11/13/2014
Type of review: Statutory
Review number: 2
Triggering action date: 6/25/2010
Due date *(five years after triggering action date)*: 6/25/2015

Five-Year Review Summary Form (continued)

Issues/Recommendations

OU(s) without Issues/Recommendations Identified in the Five-Year Review:
None.

Issues and Recommendations Identified in the Five-Year Review:				
OU(s): 1	**Issue Category: Remedy Performance**			
	Issue: Ensure long-term protectiveness			
	Recommendation: Determine a final remedy for OU5, including the need for ICs, and document in a Record of Decision.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	State	EPA	7/30/2017

Protectiveness Statement(s)

Operable Unit:	*Protectiveness Determination:*
1	Short-term Protective

Protectiveness Statement:

The interim remedy at the South Ditch is protective of human health and the environment in the short term because access is restricted by a fence and the metals-contaminated sediments that were removed are stored in a CAMU at OU3. In order for the remedy at the South Ditch to be protective in the long term, the remedy selection process for Lake DePue, OU5, must be completed and implemented. Additionally, a determination of the need for site ICs will be undertaken to ensure long-term protectiveness of human health and the environment. Illinois EPA, in consultation with EPA, will review the need for ICs during selection of the final remedy components.

I. INTRODUCTION

The purpose of a FYR is to evaluate the implementation and performance of a remedy in order to determine if the remedy will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

EPA prepares FYRs pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Contingency Plan (NCP). CERCLA Section 121 states:

> *"If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews."*

EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii) states:

> *"If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such actions no less often than every five years after the initiation of the selected remedial action."*

Illinois EPA conducted a FYR on the interim remedy implemented at the DePue/New Jersey Zinc/Mobil Chemical Corp. Superfund Site located in DePue, Bureau County, Illinois. The South Ditch (OU1) Interim Action ROD was signed on October 3, 2003. The ROD selected removal of metals-contaminated sediments to a visual standard to prevent further migration into Lake DePue. Sediments removed during the cleanup are secure in a CAMU at OU3 and stabilized in such a manner that the sediments are no longer mobile or accessible by untrained workers or the public. Illinois EPA is the lead agency for developing and implementing the remedy for the Site. EPA Region 5, as the support agency, has reviewed all supporting documentation and provided input to Illinois EPA during the FYR process.

This is the second FYR for the DePue/New Jersey Zinc/Mobil Chemical Corp. Superfund site. The triggering action for this statutory review is the completion date of the previous FYR. The FYR is required due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE). The Site consists of five Operable Units; OU1 is the primary focus of this FYR.

II. PROGRESS SINCE THE LAST REVIEW

Table 1: Protectiveness Determinations/Statements from the 2010 FYR

OU #	Protectiveness Determination	Protectiveness Statement
1	Short-term Protective	The interim remedy at OU1 is protective of human health and the environment in the short term because access to the South Ditch is restricted by a fence and the metals-contaminated sediments that were removed are stored in a CAMU at OU3. In order for the remedy at OU1 to be protective in the long term, the remedy selection process for OU5 must be completed and implemented. A site-wide protectiveness statement cannot be made at this time because remedy selection and remedial actions have not been initiated at all operable units. Additionally, a determination of the need for ICs for the site will be undertaken to ensure long-term protectiveness of human health and the environment. Illinois EPA, in consultation with U.S. EPA, will review the need for ICs during the selection of the final remedy components. If needed, Illinois EPA and U.S. EPA will require IC evaluation activities and an IC work plan for implementation and long-term stewardship.

Table 2: Status of Recommendations from the 2010 FYR

	Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Party	Original Milestone Date	Current Status	Completion Date (if applicable)
1	A small quantity of metals-contaminated sediments has been re-deposited in the upper segment of the South Ditch	a) Fully assess the re-deposited sediment as part of the OU5 RI/FS	PRPs	Illinois EPA	December 2010	Considered But Not Implemented	Not applicable
		b) Select a final remedy for the South Ditch as part of the OU5 ROD	Illinois EPA	EPA	ROD for OU5 anticipated by March 30, 2012	Ongoing	Not yet completed
		c) Evaluate the use of enhanced flood protection of the lift station	PRPs	Illinois EPA	Prior to completion of OU5 remedial action	Considered But Not Implemented	Not applicable
2	IC requirements are undetermined	Determine and clarify in the ROD for OU5 whether ICs are required as part of the final remedy for OU1 to ensure long-term protectiveness	Illinois EPA	EPA	ROD for OU5 anticipated by March 30, 2012	Ongoing	Note yet completed

Recommendation 1a & 1b

The South Ditch is located in the floodplain of Lake DePue; therefore, potential human health or ecological risk associated with the re-deposited metals-contaminated sediment will be assessed in the Lake DePue RI/FS.

Since the selection of the interim remedy at the South Ditch, an RI was conducted for Lake DePue. The RI report addressed the nature and extent of contamination and was finalized in

2009. Only general conclusions related to the South Ditch are referenced in the RI. For example, the outlet of the South Ditch exhibited higher concentrations of cobalt, iron, manganese, and thallium, particularly in surface sediment (0-2 feet), than that detected throughout Lake DePue. The data collected to support the RI was used to develop the Lake DePue human health risk assessment report finalized in 2014 and the baseline ecological risk assessment, which is ongoing. The South Ditch is currently secured by fencing and/or otherwise barred from access by trespassers due to the physical nature of the location.

Recommendation 1(c)
Evaluating the use of enhanced flood protection of the lift station will be addressed as part of the OU3 work.

Recommendation 2
This is discussed in the Institutional Controls section below.

Remedy Implementation Activities

No additional remedial actions have occurred at the South Ditch since the previous FYR. See Appendix A for a summary of previous remedial activities.

Institutional Controls

ICs are non-engineered instruments, such as administrative and/or legal controls, that restrict property use, maintain the integrity of the remedy, and ensure long-term protectiveness for areas which do not allow for UU/UE.

The interim action ROD for the South Ditch did not include ICs as a remedy component because the interim remedy largely involved source removal. Currently, the entire area of the South Ditch, where residual contamination exists, is owned by ExxonMobil and CBS Corporation, the Potentially Responsible Parties (PRPs), and subject to the property transfer requirements outlined in an Interim Consent Order (ICO) between the State of Illinois and the PRPs. The South Ditch interim action ROD addressed the principal threat by removing and containing the metals-contaminated sediments. The ongoing investigations and ultimate cleanup plan for Lake DePue will incorporate a final remedy for the South Ditch.

Illinois EPA, in consultation with EPA, will review the need for ICs during the feasibility study and remedy selection process for Lake DePue. If needed, Illinois EPA and EPA will require IC evaluation activities and an IC work plan for implementation and long-term stewardship. In addition, Illinois EPA and EPA will explore the necessity and feasibility of implementing environmental covenants at the Site pursuant to the Illinois UECA, at 765 Illinois Compiled Statues (ILCS) Ch. 122, which became effective on January 1, 2009. The UECA provides numerous statutory benefits including a standard process for creating, modifying, transferring, recording, and enforcing environmental covenants.

In the meantime, there is no evidence of actual exposure to site-related contaminants which adversely impact human health and the environment. While a small quantity of metals-contaminated sediments has been re-deposited in the South Ditch, it is in an area secured by fencing and, due to the physical nature of the location, barred from access by trespassers. In addition, the metals-contaminated sediments removed during the cleanup of the South Ditch are

secure in a CAMU and stabilized in such a manner that the sediments are no longer mobile or accessible by untrained workers or the public.

System Operation/Operation and Maintenance Activities

Regular inspections of the South Ditch and CAMU are ongoing as part of routine maintenance and inspection of the Site. The CAMU and pump station is visually inspected weekly. Seasonal mowing of the berm surrounding the CAMU is conducted as needed, approximately monthly. Maintenance of the pumps follows manufacturer's recommendations. The CAMU remains an effective control for stabilized and fixed sediment.

The South Ditch fence is inspected monthly. The roadway that runs by the head of the ditch and down to the Illinois River (following the River Water Line) is inspected weekly. Incidents of debris disposal along this roadway that have occurred in the past have not been noted in several years (Abel, pers. comm., Feb. 2015). The PRPs file monthly inspection reports as a requirement of the ICO.

While the lift station is referenced within this FYR, the lift station and the IWTP are considered part of OU3. The lift station continues to operate as designed and routine maintenance is conducted. During the period of this FYR, the IWTP and lift station remain in compliance with ARARs and the ICO. Annual Operation and Maintenance (O&M) costs have not been provided by the PRPs, but are characterized by one of the PRPs as "minimal," and any costs are absorbed into periodic inspections of the remainder of the property.

III. FIVE-YEAR REVIEW PROCESS

Administrative Components

The PRPs were notified of the initiation of the second FYR on April 15, 2014. The DePue/New Jersey Zinc/Mobil Chemical Corp. Superfund site FYR was led by Charlene Falco of Illinois EPA, Project Manager (PM) for the Site, and Jay Timm, the Illinois EPA Community Relations Coordinator (CRC). Colleen Moynihan, EPA Region 5 Remedial Project Manager, assisted in the review as the representative for the support agency.

The review, which began on April 4, 2014 consisted of the following components:

- Community Notification and Involvement;
- Document Review;
- Data Review;
- Site Inspection;
- Interviews; and
- Five-Year Review Report Development and Review.

Community Notification and Involvement

Activities to involve the community in the FYR process were initiated with a meeting in January 2015 between the PM and CRC for the Site. As shown in Appendix B, a notice was published in local newspapers, the LaSalle News Tribune and the Bureau County Republican, on January 23, 2015 and January 24, 2015, respectively, stating that there was a FYR and inviting the public to

submit any input to Illinois EPA. The results of the review and the FYR report will be made available at the Site information repository located at the Selby Township Library, 101 Depot St., PO Box 49, DePue, IL 61322.

Document Review

This FYR consisted of a review of relevant site-specific documents including O&M records and monitoring data. The remedial action objectives (RAOs), listed in the October 2003 interim ROD, were also reviewed. A list of documents reviewed in preparing this FYR is included in Appendix C.

Data Review

The South Ditch is located within the floodplain of Lake DePue, and a full risk assessment of the South Ditch had not been completed at the time of remedy selection in 2003. The interim action ROD for the South Ditch stipulated removal of metals-contaminated sediments to a visual standard only. Although additional data were collected from the South Ditch for the Lake DePue RI, very few data results exist specific to the South Ditch.

It is important to note that the RI/FS for Lake DePue will provide sufficient data and evaluation to select a final remedy for the South Ditch. Therefore, any review or discussion of the data collected from the South Ditch will be addressed in Lake DePue reports, and ultimately, the South Ditch will be integrated into the Lake DePue ROD.

Site Inspection

The inspection of the Site was conducted on November 13, 2014. Charlene Falco, Illinois EPA, and Kevin Phillips, Ecology & Environment (E&E), Illinois EPA's technical support contractor for the Site, were in attendance. The purpose of the inspection was to assess the protectiveness of the remedy.

No significant issues were noted with the condition of the South Ditch, though a section of the fence on the west side of the ditch was damaged at its southern extent. The gate and fence at the head of the South Ditch, where the ditch is most accessible to the public, was intact, though the sign on the gate (noted in the photographs from the first FYR report) was missing. The fence damage noted is likely due to the action of floodwaters or other weather-related elements rather than vandalism.

Surface water in the South Ditch had a light green and slightly cloudy appearance, fairly typical of the South Ditch. Surface water appearance was the same on previous visits (e.g., July 17, 2013, October 30, 2013, and April 4, 2014.)

The CAMU was inspected on April 1, 2015. Charlene Falco and Heather Nifong of Illinois EPA and Wilmer Reyes, CBS Corporation, were in attendance. The berms surrounding the CAMU were in good condition. Two geotubes are located on top of the CAMU within the berms. The leachate sump and lift station associated with the CAMU are functioning as designed and routine inspection is performed annually, including oil changes for the pumps as needed. Collected leachate is routed to the IWTP where it is treated along with collected groundwater. A minor amount of surface water had accumulated at the leachate sump area, which typically occurs prior to draining into the pump station.

A copy of the completed Site Inspection Checklist is included in Appendix D. Photographs documenting site conditions are included in Appendix E.

Interviews

During the FYR process, interviews were conducted with property owners, PRPs ExxonMobil and CBS Corporation, and one of their contractors. Two contractors manage the Site and one contractor operates the IWTP. The purpose of the interviews was to document any perceived problems or successes with the remedy that has been implemented to date. Interviews were conducted on February 9, 2015. The interviews are summarized below and a complete record of the interviews is included in Appendix F.

No problems or unusual situations were noted that would affect the protectiveness of the interim remedy. Inspection and maintenance of the CAMU and its associated pump station is ongoing with no problematic issues. No issues of vandalism or trespassing have been noted with the South Ditch or the immediate area.

Both the South Ditch and CAMU are subject to regular inspection, as detailed in Appendix A.

IV. TECHNICAL ASSESSMENT

Question A: Is the remedy functioning as intended by the decision documents?

Yes. According to the ROD, the remedy selected for the South Ditch was an interim action for the Site and future cleanup plans for adjacent OUs will address any residual soil and sediment contamination, groundwater contamination, and discharges of contaminated groundwater to surface water. The interim action addressed the principal threat at the South Ditch by removing metals-contaminated sediments, with containment of that sediment in a CAMU at OU3. The fence and physical setting of the South Ditch restrict access by trespassers, which was the main human health exposure pathway driving selection of the interim remedial action. The CAMU remains in good condition.

Future remedies at the South Ditch depend on the selection of the final remedy for Lake DePue. A determination of the need for ICs for the Site will be undertaken to ensure long-term protectiveness of human health and the environment. Illinois EPA, in consultation with EPA, will review the need for ICs in the selection of the final remedy components. If needed, Illinois EPA and EPA will require IC evaluation activities and an IC work plan for implementation and long-term stewardship of ICs.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy selection still valid?

Yes. All the assumptions regarding relevant receptors and RAOs used at the time of the interim action ROD are still valid. The ROD did not specify numeric cleanup levels for sediments, but required cleanup to a visual standard only. As documented in the South Ditch Interim Remedial Action Sediment Removal Final Report, the appropriate quantity of sediment was removed from the South Ditch. Therefore, the principal threat was removed from the South Ditch. While it is possible that small quantities of metals-contaminated sediments have been re-deposited in the South Ditch the following factors limit exposures:

- the area is secured by fencing and/or otherwise barred from access by trespassers due to the physical nature of the location;
- the metals-contaminated sediments removed during the cleanup are secure in a CAMU and stabilized in such a manner that the sediments are no longer mobile or accessible by untrained workers or the public;
- no changes in land use have occurred at the South Ditch or in adjacent properties;
- no different receptors or routes of exposure have been identified;
- no previously unidentified contaminants of concern or contaminant sources have been identified; and
- no toxic by-products have been identified that would invalidate the assumptions.

Because the interim ROD for the South Ditch did not specify numeric cleanup levels for sediments, but required a visual standard, the change in toxicity factors for several metals since the last FYR does not affect the RAOs of the South Ditch remedy. For example, arsenic, cadmium, copper, lead, and zinc were identified as site-related contaminants contributing to unacceptable risks and hazards for human health, and these contaminants will be addressed in the Lake DePue ROD.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No. No other information has come to light that could call into question the protectiveness of the remedy. It is likely that some volume of contaminated groundwater still discharges to the South Ditch; however, the volume has likely been greatly reduced since installation of the lift station and IWTP. The continual discharge, along with contaminant migration from surrounding soils, and flooding episodes may have caused some degree of re-contamination of the South Ditch. This was anticipated to occur to a certain extent, and the final remedy for Lake DePue will address the extent of contamination at the South Ditch.

Technical Assessment Summary

The remedy is functioning as intended. The interim actions as described in the ROD addressed the principal threat at the South Ditch by achieving removal of metals-contaminated sediments and containment of that sediment in a CAMU on the Former Plant Site Area. All the assumptions regarding relevant receptors and RAOs, land uses, routes of exposure and exposure pathways, contaminants of concern and contaminant sources evaluated at the time of the interim ROD are still valid. While certain toxicity factors for some metals and exposure factors have been revised since the interim remedial action was completed, this has not affected the protectiveness of the remedy. Currently, an unknown, but relatively minor, quantity of metals-contaminated sediment has been re-deposited in the South Ditch; however, the fence and physical setting of the South Ditch restricts access. Contaminated sediment removed from the South Ditch remains controlled within the CAMU. The ongoing investigation and ultimate cleanup plan for Lake DePue will integrate the South Ditch and determine the need for any ICs.

V. ISSUES/RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Table 3: Issues and Recommendations/Follow-up Actions

OU #	Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness?	
						Current	Future
1	Ensure long-term protectiveness	Determine a final remedy for OU5, including the need for ICs, and document in a Record of Decision	Illinois EPA	EPA	7/30/2017	No	Yes

VI. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)

Operable Unit:	*Protectiveness Determination:*
1	Short-term Protective

Protectiveness Statement:

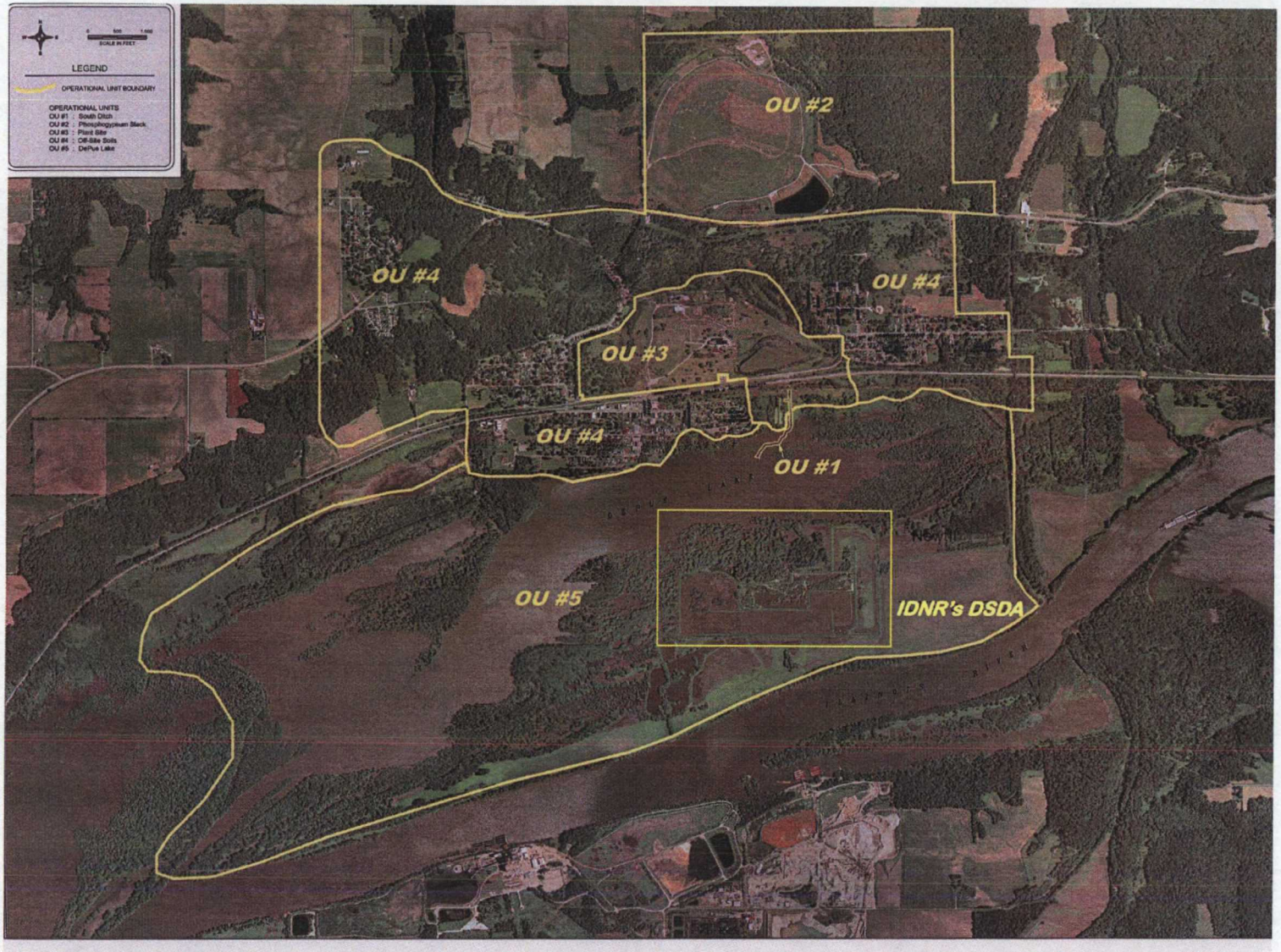
The interim remedy at the South Ditch is protective of human health and the environment in the short term because access is restricted by a fence and the metals-contaminated sediments that were removed are stored in a CAMU at OU3. In order for the remedy at the South Ditch to be protective in the long term, the remedy selection process for Lake DePue, OU5, must be completed and implemented. Additionally, a determination of the need for site ICs will be undertaken to ensure long-term protectiveness of human health and the environment. Illinois EPA, in consultation with EPA, will review the need for ICs during selection of the final remedy components.

VII. NEXT REVIEW

The next FYR report for the DePue/New Jersey Zinc/Mobil Chemical Corp. Superfund site is required five years from the completion date of this review.

FIGURE 1

Site Map



Operational Units (OU's) - New Jersey Zinc / Mobil Chemical Site - Bureau County, DePue, Illinois - Photography 6/29/2009

Legend

OU #1: South Ditch

OU #2: Phosphogypsum Stack

OU #3: Plant Site

OU #4: Off-Site Soils

OU #5: DePue Lake

DSDA: Illinois Department of Natural Resources Dredged Soil Disposal Area

APPENDIX A

EXISTING SITE INFORMATION

A. SITE CHRONOLOGY

Table A-1: Site Chronology

Event	Date
Initial discovery of problem or contamination	March 1992
Pre-NPL responses – State Consent Order	November 1995
OU1 RI/FS Complete	February 1996
Site Proposed to NPL	April 1, 1997
Final NPL listing	May 10, 1999
OU1 Interim Action ROD Signature	October 3, 2003
OU1 Remedial Design Completed	July 1, 2005
OU1 Construction Start	July 1, 2005
OU1 Final Removal Report	May 3, 2006
OU1 Construction Complete	June 20, 2006
First Five-Year Review	June 25, 2010

B. BACKGROUND

Physical Characteristics

The Site is located within the Village of DePue in Bureau County, Illinois. The Site encompasses approximately 950 acres, which includes the former facility and possibly affected off-site properties. The facility boundaries include Lake DePue to the south, East Street to the west, Broadway Street to the east, and centers of Section 25 and 26 to the north (T.16N-R.10E). The Site is bordered by residential areas to the west and east. A main thoroughfare, railroad tracks, residential area, and Lake DePue border the Site to the south. Forested and agricultural land is present to the north of the Site.

The South Ditch is fully within the annual floodplain of Lake DePue and flooding is controlled by the water level of the Illinois River. The South Ditch provides surface water drainage for a portion of the Site and continues to convey uncontrolled discharges of groundwater and surface water from the Former Plant Site Area though quantities are significantly reduced since the installation of the lift station and operation of the IWTP. Currently, the South Ditch receives contaminated groundwater discharged from the Former Plant Site Area that is not intercepted by the Iron Rich Materials (IRM) walls and interceptor trenches south of the slag pile as well as contaminated groundwater and storm water from the upland portion of the southeast area. Roughly 16-86% of contaminated groundwater is captured by the interceptor trenches and IRM walls, based on conditions (Environ, 2014), and routed to the lift station for treatment at the IWTP and discharge to the Illinois River.

The northern 120 to 150 feet of the South Ditch is incised into fill consisting of placed soil and slag material. The remainder of the South Ditch traverses marshy lowlands adjacent to Lake DePue. The South Ditch empties directly into Lake DePue approximately 1,600 feet below the

origin of the South Ditch. Lake DePue is an environmentally sensitive area and also provides significant recreational functions for the local community.

Hydrology

Within the South Ditch there is an Upper Water Bearing Zone (UWBZ) which occurs throughout much of the eastern plant site area, a layer of peat and low permeability silts and clays acting as an aquitard, and a lower alluvial aquifer (Environ, 2014).

The UWBZ includes a permeable saturated zone which consists of surficial soil and fill material. The northern portion of the South Ditch is incised within approximately 10-15 feet of fill material. The aquitard is about 12-16 feet thick, including about a foot of peat, in the northern portion of the South Ditch and immediate area of the South Ditch. The lower aquifer underlies the peat, silts and clays, and is a sandy gravel and gravelly sand unit with little to no fines (Environ, 2014).

Water-bearing zones flow south from the Bluff Area at the north of the former facility, south across the Former Plant Site Area, and toward the South Ditch and Lake DePue. Flow direction does not experience seasonal changes. Within the area adjacent to the South Ditch, there is generally an upward vertical gradient within the lower aquifer and from the lower aquifer to the UWBZ (Environ, 2014). The lower aquifer discharges to various seeps, springs, and wetland areas that border the Lake DePue and in the area adjacent to the South Ditch (Terra, 2012).

Land and Resource Use

The Site is surrounded by and currently fully contained within the Village of DePue limits. The Site as defined by previously PRP-utilized land consists currently of 985 acres of PRP-owned land, with approximately 195 acres of that within the Former Plant Site Area, OU3.

The South Ditch is bounded on the north by the Iowa Interstate Railroad grade, on the east and west by floodplain wetland vegetation and on the south by Lake DePue and the State of Illinois DePue-Donnely Wildlife Management area (see Figure 1). The South Ditch is entirely within the limits of the Lake DePue investigations. Lake DePue is bounded on the north partially by the Village of DePue's Lake Park and residential areas and the remainder by floodplain wetlands and forest; floodplain surrounds the remainder of Lake DePue on the west, east, and south. Former, current, and projected land use for Lake DePue remains as a natural area, providing both natural resources and recreational resources. The DePue-Donnely Wildlife Management Area is known to harbor three nesting pairs of American Bald Eagles and over 600 Great Blue Heron nests. This wildlife area is an integral portion of the Illinois Fly Way Water Fowl Program.

The Phosphogypsum Stack (OU2) is north of the Former Plant Site Area and north of Route 29. The stack area is bounded on the east and south by forested land and on the north and west by agricultural land. Prior to the construction of the phosphogypsum stack, the property was open space. The property is currently managed as a phosphogypsum disposal area and will continue to be managed in this way.

The Former Plant Site Area (OU3) is bounded on the east, west and south by residential areas and on the north by forested land. The current use is as open space with some industrial activity, but no public access. The IWTP is located at the Former Plant Site Area and is anticipated to remain in operation well into the future as part of the long-term treatment and O&M for contaminated groundwater. The PRPs currently envision the Former Plant Site Area as "undeveloped non-public access green space" after remediation is completed.

The boundaries of Off-Site Soils (OU4) remains undefined, but generally includes all residential areas of the Village of DePue and will likely include some agricultural and forested areas. Off-Site Soils will likely be bounded by Lake DePue on the south and mixed agricultural and forested lands on the east, west, and north.

The Village of DePue has two municipal water supply wells located immediately north of Lake DePue behind the municipal water treatment plant. The wells are both finished to a depth of greater than 1,490 feet below land surface and draw their water from the St. Peter Sandstone. The upper St. Peter in this area is weathered sandstone and is overlain by more than 900 feet of bedrock, providing significant protection to the potable water source. The potable water supply system undergoes routine sampling by the Village and Illinois EPA's Division of Public Water Supplies and is consistently found to be in compliance with all drinking water standards.

History of Contamination

Starting in the early 1900s, the Site was used for primary zinc smelting, the manufacture of sulfuric acid, zinc dust, lithopone paint pigment, billet zinc, cadmium metal, and diammonium phosphate fertilizer.

The contamination within the South Ditch resulted from the commingling of a discrete surface water flow and several groundwater flows. The groundwater flows had a reduced pH and a high dissolved metals (various metal sulfates $XXSO_4$) concentration, while the surface waters contained limited metal content, but exhibited a highly buffered, slightly elevated pH ($CaCO_3$). The mixing of these two water sources resulted in the deposition of mixed metal (primarily zinc and copper) carbonate in the South Ditch sediments.

Beginning with the promulgation of the Clean Water Act and the Clean Air Act, violations were noted in numerous EPA and Illinois EPA inspections and the subject of myriad complaints and orders to the former owners and operators of the various manufacturing businesses at the Site.

In order to comply with requirements of a 1981 Interim Consent Order (ICO), the responsible parties applied for and received a National Pollutant Discharge Elimination System (NPDES) permit for a drainage pipe that drained into the South Ditch, installed a stormwater collection system, and graded and vegetated the slag pile. In 1988, variances were granted to some of the NPDES discharge limits. In order to meet some of the limits, the owners lined an upstream collection trench with IRM, a binding agent for metals removal, installed an IRM slurry wall between the slag pile and receiving stream, and installed an IRM-lined collection sump in the sewer line.

The Site was the subject of a preliminary assessment by EPA in 1980. A second preliminary assessment was conducted in 1983, with two site inspections conducted in 1984 and 1987. Following changes to the hazard ranking system scoring model in the early 1990s, the Site was revisited by Illinois EPA's hazard ranking program in 1992 with an Expanded Site Inspection. The results of that sampling and assessment indicated that the Site would qualify for the NPL. The Site was proposed to the NPL in 1997 and finalized on the NPL on May 10, 1999.

Negotiations were opened in early 1993 with the PRPs and resulted in an ICO between the State of Illinois and Horsehead Industries, Inc., Mobil Oil Corporation, and Viacom International, Inc. The ICO was entered in state Circuit Court in November 1995. At the time the ICO was negotiated, the Site had not been organized into OUs but rather required an RI/FS and Remedial Design on the extent of all contamination originating from the former manufacturing site.

Initial Response

In order to comply with the ICO, the PRPs have completed a surface water study and implementation of a surface water diversion and management system, construction and operation of the IWTP, completion of a dust monitoring program, and revegetation of the Former Plant Site Area. The phosphogypsum stack has been capped and includes a rehabilitated clearwater pond and constructed treatment wetland to support long-term efforts at dewatering the stack. Remedial investigations, feasibility studies, and design studies associated with presumptive remedies are ongoing at OUs 3, 4, and 5. OU2 is undergoing closure pursuant to 35 IAC 807 landfill regulations, as provided for in the ICO.

The RI at South Ditch was initiated in November 1995 and an interim remedy was selected in a ROD dated October 3, 2003. Illinois EPA signed the ROD, with EPA concurrence.

Basis for Taking Action

The RI for the South Ditch concluded that 8,000 cubic yards of metals-contaminated sediments contained elevated concentrations of arsenic, zinc, copper, cadmium, and lead. The ecological screening risk assessment portion of the RI indicated the sediments were 98% and 100% acutely toxic to two different test species. The human health risk assessment indicated unacceptable risk. Arsenic, cadmium, copper, and zinc exceeded a hazard index of 1 for the construction worker scenario, and copper exceeded a hazard index of 1 for the child trespasser scenario.

In addition to the ecological and human health risks, remedy selection was driven by the fact that metals-laden sediment was in an extremely dynamic physical setting with the potential to migrate into Lake DePue during periods of high storm water flow in the South Ditch and/or during flooding in Lake DePue and the Illinois River.

C. REMEDIAL ACTIONS

Remedy Selection

The October 2003 interim action ROD addressed the principal threat at the South Ditch by requiring the removal of the metals-contaminated sediments. The interim action ROD did not

contain chemical-specific cleanup targets, but rather required the removal of the visibly-contaminated sediments identified during the RI. The following RAOs were established for the South Ditch interim action ROD:

- Mitigate the potential for flood water and water discharge to the South Ditch to mobilize the metals-contaminated sediments;
- Mitigate the potential acute exposure risk to sensitive ecological and human receptors via contact with the metals-contaminated sediments;
- Mitigate the potential of exposure risk for the on-site trespasser; and
- Be compatible with future site-wide remedies.

To achieve these RAOs, Alternative 4B was selected as the interim remedy at the South Ditch. Key components of the selected remedy included:

- Treatability studies to determine the following:
  - appropriate admixtures and dosage rates to achieve adequate contaminant removal from discharge water streams;
  - retention (settling) time required in decant basins;
  - assessment of physical treatment enhancements likely to assist in meeting discharge criteria (i.e. high volume sand filtration);
  - pilot evaluations of mechanical techniques for high solids sediment removal;
  - physical stabilization and chemical fixation agents, mixing rates and curing times required prior to placement of sediment in the Interim Containment Cell;
  - and silt fence material selection, placement and maintenance frequency;
- Construction of settling basins (decant ponds);
- Construction of an interim containment cell where the bottom and sidewalls of the cell would generally consist of a graded layer of low-permeability soil, a synthetic impermeable liner and an aggregate drainage layer under the stabilized metals-contaminated sediments;
- Hydraulic and/or mechanical dredging of metals-contaminated sediments;
- Dewatering, stabilization and finally placement of the stabilized metals-contaminated sediments into the interim containment cell;
- Construction of a solid waste cap over the interim containment cell; and
- Monitoring and maintenance for the interim containment cell.

Prior to implementation of the South Ditch remedy, the contaminated groundwater and surface water known to be the source of the metals-contaminated sediments was brought under control and treated in an on-site IWTP. The IWTP has consistently operated in compliance with ARARs and the ICO between the PRPs and the State of Illinois.

Remedy Implementation

The South Ditch interim action ROD required removal of sediment to a visual standard, acknowledging that the soils adjacent to the South Ditch were likely contaminated and would be addressed as part of the Lake DePue remedy. The RI/FS for Lake DePue will provide data to select and design a final remedy for the South Ditch. The interim response actions for the metals-contaminated sediments at the South Ditch addressed the principal threat by removing the sediments and placing them in a CAMU, an environmentally-secure unit at OU3.

Metals-contaminated sediments were removed from the South Ditch using long-reach backhoe technology working from approximately 1,600 feet of interlocking swamp mats. Normal storm and spring water flow into the South Ditch was diverted around the work area. The combined water flow contained elevated levels of ammonia and, in order to be consistent with NPDES requirements and ARARs, the water was directed through a particulate bag filter and discharged in the Lake DePue floodplain. The vegetation in the floodplain provided adequate ammonia removal through phytoremediation.

The removal of the sediment was accomplished during a period of low water levels in the fall of 2005. Remedy initiation needed to occur during an extended dry period because the entire work area was well below the annual flood elevation (450 ft above mean sea level). Portions of the work area were below the flat pool elevation of Lake DePue and the Illinois River (440.2 ft above mean sea level). The collected soft metals-contaminated sediments were then fixed and stabilized using combustion fly ash with a greater than 60% active calcium oxide (CaO) concentration. The high CaO content was required to fix the metals while the inert mineral portion of the combustion ash provided physical stabilization to support the weight of a future cap.

The CAMU was constructed to contain the metals-contaminated sediments from the South Ditch and is consistent with RCRA requirements and ARARs. The CAMU has a high-density, polyethylene, multi-layered, lined bottom and remains uncapped. Stabilized sediment was graded to promote drainage to the CAMU collection system. Soil that was used to create the associated sediment mixing and drying cells were placed over the CAMU to form a "temporary cover" that helped stabilize the material and preclude movement via wind and stormwater erosion. The cover will allow additional sediments or soils to be placed in the CAMU during future actions. A leachate collection system pulls accumulated storm water from the CAMU and directs the leachate to the on-site IWTP. The CAMU is located adjacent to and upgradient of a 15-acre primary zinc smelter slag pile within the fenced area of OU3 and resides over an area of contaminated soil and groundwater.

Currently, two geotubes have been placed within the CAMU and will be incorporated into the final closure of the CAMU. A geotube pilot study was intended to determine if the geotubes could be used to facilitate dewatering and disposal of IWTP sludge in the CAMU to replace the ongoing practice of dewatering in the filter press and disposal off-site. Due to the nature of the IWTP sludge (high bound water content – i.e. water molecules bonded to solid particles), the geotubes were not successful at dewatering the sludge (Environ, 2015).

The interim action ROD for the South Ditch did not include ICs as a remedy component. Currently, the entire area of the South Ditch, where residual contamination exists, is owned by the PRPs and subject to the property transfer requirements outlined in the ICO. The South Ditch interim action ROD addressed the principal threat by removing and containing the metals-contaminated sediments. The ongoing investigations and ultimate cleanup plan for Lake DePue will incorporate a final remedy for the South Ditch.

While a small quantity of metals-contaminated sediments has been re-deposited in the South Ditch, it is in an area secured by fencing and, due to the physical nature of the location, barred from access by trespassers. In addition, the metals-contaminated sediments removed during the cleanup of the South Ditch are secure in a CAMU and stabilized in such a manner that sediment is no longer mobile or accessible by untrained workers or citizenry.

System Operation/Operation and Maintenance

O&M of the South Ditch consists of periodic inspection of the area and monthly visual observation of the CAMU. Currently, the South Ditch is secured by a 6-ft-high chain link fence and gate. Since on-site containment is a key component of the remedy, long-term management and monitoring of the Site is required.

During the period of this FYR, the IWTP and lift station remain in compliance with ARARs and the ICO. The South Ditch is an extension of Lake DePue environment, and the CAMU remains an effective control for the stabilized and fixed sediment.

APPENDIX B

PUBLISHED PUBLIC NOTICE(S)

New Jersey Zinc/Mobil Chemical Superfund Site – DePue, Illinois Five-Year Review

The Illinois Environmental Protection Agency (Illinois EPA) is conducting the required five-year review of the South Ditch Operable Unit at the New Jersey Zinc/Mobil Chemical Superfund Site in DePue, Illinois. The Superfund law requires regular reviews of sites (at least every five years) where the cleanup is complete but hazardous waste remains on site. These reviews are done to ensure that the cleanup continues to protect human health and the environment. This is the second scheduled Five-Year Review for this site.

The South Ditch Operable Unit received past discharges of contaminated water the New Jersey Zinc/Mobil Chemical plant site until 1997 when the owners put a collection and treatment system into operation. Investigations by the Illinois EPA and the owners determined that the South Ditch was a point of deposition of metals-contaminated sediment, which represented a threat to human health and the environment.

The Illinois EPA, with concurrence from the United States Environmental Protection Agency, selected the following cleanup actions for the site, which included:

- Excavation of visually discernible unnatural sediment
- Chemical and physical fixation of the sediment with bed ash
- Placement of the treated sediment in a newly constructed waste management unit on the former plant site.

The Five-Year Review will evaluate the performance of the initial cleanup and ensure that it continues to protect human health and the environment.

This is the second Five-Year Review for the South Ditch Operable Unit at the New Jersey Zinc/Mobil Chemical site. The five-year review team (which includes technical and community relations representatives from both the state and federal agencies) participates in data/document reviews and a site inspection. The review is expected to be completed by June 30, 2015. Once the review team compiles the information, it will develop a summary of findings which will be available for public review at the Selby Township Public Library Information Repository for the Site, 101 Depot Street, DePue, Illinois 61322 (Phone: 815.447.2660)and at the Illinois Environmental Protection Agency in Springfield, Illinois.

Anyone wishing further information on the New Jersey Zinc/Mobil Chemical Superfund site, the five-year review process, and/or would like the opportunity to meet with Illinois EPA regarding the Five-Year Review should contact: Jay Timm, Illinois EPA, Office of Community Relations, 1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276. Phone: 217.557.4972.
Email: jay.timm@illinois.gov. More information about the site can be found at
http://www.epa.illinois.gov/topics/community-relations/sites/new-jersey-zinc/index

Around the Region

City	Tomorrow Hi/Lo/W	Sun. Hi/Lo/W	City	Tomorrow Hi/Lo/W	Sun. Hi/Lo/W
Alton	47/34/pc	46/27/sh	Galesburg	41/31/pc	39/20/sn
Arlington Hts	40/30/c	35/18/sn	Joliet	40/30/pc	37/20/sn
Aurora	40/32/pc	37/16/sn	Kankakee	40/31/pc	38/21/sn
Belleville	48/35/pc	48/26/sh	Macomb	41/33/pc	40/24/sn
Bloomington	41/31/pc	40/24/sn	Naperville	39/31/pc	36/18/sn
Carbondale	48/37/s	52/28/sh	Normal	41/32/pc	39/23/sn
Charleston	41/33/pc	42/23/c	Peoria	45/33/pc	42/25/sn
Clinton	42/32/pc	40/24/sn	Pontiac	36/21/sf	24/5/sn
Davenport	42/30/pc	39/21/sn	Princeton	41/31/pc	38/21/sn
De Kalb	38/28/pc	33/16/sn	Rockford	41/31/c	35/16/sn
East St. Louis	50/37/pc	50/27/sh	Rock Island	41/31/pc	39/20/sn
Effingham	45/33/pc	47/27/c	Tinley Park	40/31/pc	37/21/sn
Elgin	39/30/c	35/16/sn	Waukegan	40/28/sf	34/16/sn
Evanston	39/31/c	35/20/sn	Wheaton	39/31/pc	35/19/sn

Around the Nation

City	Tomorrow Hi/Lo/W	Sun. Hi/Lo/W	City	Tomorrow Hi/Lo/W	Sun. Hi/Lo/W
Albany	34/25/c	28/9/pc	Las Vegas	67/42/s	69/45/s
Albuquerque	46/24/s	52/28/s	Little Rock	59/38/s	64/35/s
Anchorage	16/-1/c	7/-4/sn	Los Angeles	81/54/s	83/56/pc
Atlanta	48/35/pc	56/37/s	Louisville	48/33/s	48/26/sh
Atlantic City	41/33/sn	43/32/c	Memphis	55/37/s	59/35/pc
Baltimore	40/27/sn	43/33/c	Miami	78/52/sh	77/54/s
Baton Rouge	66/36/s	62/41/s	Milwaukee	41/29/sf	33/19/sn
Billings	52/40/c	56/42/pc	Minneapolis	36/29/c	34/22/sn
Birmingham	50/32/s	58/32/pc	New Orleans	67/40/s	62/44/s
Boise	40/27/pc	41/29/c	New York	38/31/sn	39/23/s
Boston	36/26/sn	37/16/s	Oklahoma City	60/38/s	66/42/s
Burlington, VT	36/15/sf	16/2/pc	Omaha	55/38/s	49/33/pc
Charleston, SC	60/36/r	58/45/s	Orlando	66/40/pc	63/48/r
Charleston, WV	42/23/sn	47/35/t	Palm Beach, FL	76/49/sh	69/54/s
Cheyenne	47/35/pc	54/41/r	Palm Springs, CA	76/49/s	79/51/pc
Chicago	40/31/c	36/20/sn	Philadelphia	39/30/sn	42/31/r
Cincinnati	45/32/pc	44/23/r	Phoenix	76/46/pc	77/51/pc
Cleveland	35/28/sf	33/16/sn	Portland, OR	58/42/c	59/39/pc
Columbus, OH	40/31/pc	41/20/sn	Providence	35/24/sn	37/16/s
Dallas	58/39/pc	67/44/s	Reno	39/30/s	61/32/s
Denver	53/32/pc	57/37/s	Richmond	46/34/r	52/29/s
Des Moines	50/36/pc	45/31/sn	Sacramento	55/42/s	54/42/pc
Detroit	36/25/sf	28/6/sn	St. Louis	51/39/pc	49/28/sh
Hartford	34/25/sn	34/14/s	Salt Lake City	39/26/pc	45/28/c
Houston	58/38/s	65/43/s	San Francisco	64/47/s	66/47/s
Indianapolis	41/28/pc	40/18/c	Seattle	51/47/c	58/44/c
Jackson, MS	54/34/s	62/40/s	Topeka	58/40/s	57/32/pc
Kansas City	56/39/s	53/31/pc	Washington, DC	44/33/sn	48/35/s

Weather(W): c-cloudy, pc-partly cloudy, s-clear, sh-showers, t-thunderstorms, r-rain, sf-snow flurries, sn-snow, i-ice

New Jersey Zinc/Mobil Chemical Superfund Site – DePue, Illinois Five-Year Review

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3/16/15

liments to build support for a U.N. climate pact in Paris among more than 190 nations in December.

"I think you guys know how serious the global warming thing is, and so for us we're taking it very seriously, and we wanted to do something very different this time," Williams said.

"Instead of just having people perform, we literally — and I can't go into it now because some interesting surprises are coming out soon — but we literally are going to have humanity harmonize all at once."

After giving a trademark slide show, in which he linked rising temperatures to the Arab Spring and the catastrophic Syrian war, Gore said the concert will engage "a billion voices with one message — to demand climate action now."

The U.N.-brokered climate negotiations have been simmering for years. Nations have agreed on the goal of stabilizing greenhouse gases at a level that keeps global warming below 2 degrees C (3.6 F), compared with pre-industrial times, but a legally binding agreement that puts that into action has remained elusive.

A key sticking point is how to pay for it. Another is how much historical responsibility nations must bear for polluting to industrialize versus developing countries that are polluting more now to grow their markets.

The world's two largest emitters of heat-trapping gases, China and the U.S., negotiated secretly for months in 2014 to reach a non-binding climate change agreement.

However, momentum from that deal dissipated in Lima, Peru, where a round of climate talks salvaged a compromise in December to try to set up a Paris deal.

Gore said that along with putting a price on carbon to speed up the transition to renewable energies, "we need to put a price on denial in politics. People need to stop financing denial."

Call in a newstip to (815) 220-6935

APPENDIX C

LIST OF DOCUMENTS REVIEWED

2013. US Census Bureau, American Community Survey (ACS), 2009 -2013 5-year ACS estimate, http://factfinder.census.gov/faces/nav/jsf/pages/guided_search.xhtml (Accessed February 24, 2015)

Abel, Joseph. Personal communication, February 9, 2015.

Arcadis, 2009. DePue Lake Remedial Investigation Report, Volumes I and II, July.

Environ, 2014. Phase II Remedial Investigation Report, OU3: On-Site Soils and Groundwater, DePue Site, DePue, Illinois, Volumes I and II, February.

Environ, 2015. Communication regarding geotube pilot study and CAMU. June 1.

Golder, 1997. Focused South Ditch Remedial Investigation DePue site, DePue, Illinois, Volume I, Text, Tables and Figures. July.

Illinois Environmental Protection Agency. 2003. Record of Decision, New Jersey Zinc/Mobil Chemical National Priorities List Site, South Ditch Sediments Interim Action, DePue, Illinois. October.

Terra, 2012. Phase I/II/III Hydrogeologic and Supplemental Investigation Report For Operable Unit 2: The Phosphogypsum Stack Area, The DePue Site, DePue, Illinois. Volume I. July.

Terra 2012a. Letter to resident regarding Analytical Results for Water Samples Collected on August 22, 2012. October 5.

Terra 2012b. Letter to resident regarding Analytical Results for Water Sample Collected on November 7, 2012. December 12.

Terra, 2013. Phreatic Water, Ground Water, and Surface Water Monitoring Data Report for Operable Unit 2: The Phosphogypsum Stack Area, The DePue Site, DePue, Illinois, Revised. May 29.

IDPH, 2013. Illinois Department of Public Health. Letter to resident interpreting analytical results. January 23.

APPENDIX D

SITE INSPECTION CHECKLIST

Please note that "O&M" is referred to throughout this checklist. At sites where Long-Term Response Actions are in progress, O&M activities may be referred to as "system operations" since these sites are not considered to be in the O&M phase while being remediated under the Superfund program.

Five-Year Review Site Inspection Checklist (Template)

(Working document for site inspection. Information may be completed by hand and attached to the Five-Year Review report as supporting documentation of site status. "N/A" refers to "not applicable.")

I. SITE INFORMATION

Site name: NEW JERSEY ZINC	**Date of inspection:** 11/13/2014 + 4/1/2015
Location and Region: DEPUE, IL, Rg.5	**EPA ID:** ILD062340641
Agency, office, or company leading the five-year review: ILLINOIS EPA	**Weather/temperature:** OVERCAST, COLD (2014), SUNNY, COOL (2015)

Remedy Includes: (Check all that apply)

- Landfill cover/containment
- X Access controls
- Institutional controls
- Groundwater pump and treatment
- Surface water collection and treatment
- X Other CONTAINMENT IN CAMU
- Monitored natural attenuation
- Groundwater containment
- Vertical barrier walls

Attachments: Inspection team roster attached Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** Steve Weberski (Name) Plant Operator (Title) 2/9/2015 (Date)
   Interviewed at site at office (by phone) Phone no. 815-447-2155
   Problems, suggestions; Report attached

2. **O&M staff** _____ (Name) _____ (Title) _____ (Date)
   Interviewed at site at office by phone Phone no. _____
   Problems, suggestions; Report attached

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; Report attached _____
_____

4. **Other interviews** (optional) Report attached.

See Appendix F.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**
   - O&M manual — Readily available — Up to date — N/A
   - As-built drawings — Readily available — Up to date — N/A
   - Maintenance logs — Readily available — Up to date — N/A

   Remarks

2. **Site-Specific Health and Safety Plan** — Readily available — Up to date — N/A
   - Contingency plan/emergency response plan — Readily available — Up to date — N/A

   Remarks

3. **O&M and OSHA Training Records** — Readily available — Up to date — N/A

   Remarks

4. **Permits and Service Agreements**
   - Air discharge permit — Readily available — Up to date — N/A
   - Effluent discharge — Readily available — Up to date — N/A
   - Waste disposal, POTW — Readily available — Up to date — N/A
   - Other permits _____ — Readily available — Up to date — N/A

   Remarks

5. **Gas Generation Records** — Readily available — Up to date — N/A

   Remarks

6. **Settlement Monument Records** — Readily available — Up to date — N/A

   Remarks

7. **Groundwater Monitoring Records** — Readily available — Up to date — N/A

   Remarks

8. **Leachate Extraction Records** — Readily available — Up to date — N/A

   Remarks

9. **Discharge Compliance Records**
   - Air — Readily available — Up to date — N/A
   - Water (effluent) — Readily available — Up to date — N/A

   Remarks

10. **Daily Access/Security Logs** — Readily available — Up to date — N/A

    Remarks

IV. O&M COSTS

1. **O&M Organization**

State in-house — Contractor for State
PRP in-house — Contractor for PRP
Federal Facility in-house — Contractor for Federal Facility
Other _____

2. **O&M Cost Records**

Readily available — Up to date
Funding mechanism/agreement in place
Original O&M cost estimate _____ Breakdown attached

Total annual cost by year for review period if available

From _____ To _____ _____ Breakdown attached
Date Date Total cost

From _____ To _____ _____ Breakdown attached
Date Date Total cost

From _____ To _____ _____ Breakdown attached
Date Date Total cost

From _____ To _____ _____ Breakdown attached
Date Date Total cost

From _____ To _____ _____ Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS — Applicable — N/A

A. Fencing

1. **Fencing damaged** — Location shown on site map — Gates secured — N/A

Remarks _____

B. Other Access Restrictions

1. **Signs and other security measures** — Location shown on site map — N/A

Remarks _____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented Yes No N/A
Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date Yes No N/A
Reports are verified by the lead agency Yes No N/A

Specific requirements in deed or decision documents have been met Yes No N/A
Violations have been reported Yes No N/A
Other problems or suggestions: Report attached

2. **Adequacy** ICs are adequate ICs are inadequate N/A
Remarks _____

D. General

1. **Vandalism/trespassing** Location shown on site map No vandalism evident
Remarks _____

2. **Land use changes on site** N/A
Remarks NONE

3. **Land use changes off site** N/A
Remarks NONE

VI. GENERAL SITE CONDITIONS

A. Roads Applicable N/A

1. **Roads damaged** Location shown on site map Roads adequate N/A
Remarks _____

B. Other Site Conditions

Remarks_____

VII. LANDFILL COVERS

(Applicable) N/A (CAMU)

A. Landfill Surface

1. **Settlement** (Low spots) Location shown on site map (Settlement not evident)
   Areal extent_____ Depth_____
   Remarks_____

2. **Cracks** Location shown on site map (Cracking not evident)
   Lengths_____ Widths_____ Depths_____
   Remarks_____

3. **Erosion** Location shown on site map (Erosion not evident)
   Areal extent_____ Depth_____
   Remarks_____

4. **Holes** Location shown on site map (Holes not evident)
   Areal extent_____ Depth_____
   Remarks_____

5. **Vegetative Cover** Grass Cover properly established (No signs of stress)
   Trees/Shrubs (indicate size and locations on a diagram)
   Remarks Extensive Vegetative Cover

6. **Alternative Cover (armored rock, concrete, etc.)** (N/A)
   Remarks_____

7. **Bulges** Location shown on site map (Bulges not evident)
   Areal extent_____ Height_____
   Remarks_____

8. **Wet Areas/Water Damage** — Wet areas/water damage not evident
   - Wet areas — Location shown on site map — Areal extent_____
   - Ponding — Location shown on site map — Areal extent 30 ft²
   - Seeps — Location shown on site map — Areal extent_____
   - Soft subgrade — Location shown on site map — Areal extent_____

   Remarks Surface water drains to low spot associated with sump. Water will collect temporarily while draining to sump.

9. **Slope Instability** — Slides — Location shown on site map — No evidence of slope instability
   Areal extent_____
   Remarks_____

B. Benches — Applicable — N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** — Location shown on site map — N/A or okay
   Remarks_____

2. **Bench Breached** — Location shown on site map — N/A or okay
   Remarks_____

3. **Bench Overtopped** — Location shown on site map — N/A or okay
   Remarks_____

C. Letdown Channels — Applicable — N/A

(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** — Location shown on site map — No evidence of settlement
   Areal extent_____ Depth_____
   Remarks_____

2. **Material Degradation** — Location shown on site map — No evidence of degradation
   Material type_____ Areal extent_____
   Remarks_____

3. **Erosion** — Location shown on site map — No evidence of erosion
   Areal extent_____ Depth_____
   Remarks_____

4. **Undercutting** Location shown on site map No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____

5. **Obstructions** Type_____ No obstructions
Location shown on site map Areal extent_____
Size_____
Remarks_____

6. **Excessive Vegetative Growth** Type_____
No evidence of excessive growth
Vegetation in channels does not obstruct flow
Location shown on site map Areal extent_____
Remarks_____

D. Cover Penetrations Applicable (N/A)

1. **Gas Vents** Active Passive
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance
N/A
Remarks_____

2. **Gas Monitoring Probes**
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance N/A
Remarks_____

3. **Monitoring Wells** (within surface area of landfill)
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance N/A
Remarks_____

4. **Leachate Extraction Wells**
Properly secured/locked Functioning Routinely sampled Good condition
Evidence of leakage at penetration Needs Maintenance N/A
Remarks_____

5. **Settlement Monuments** Located Routinely surveyed N/A
Remarks_____

E. Gas Collection and Treatment Applicable N/A

1. **Gas Treatment Facilities**
   Flaring Thermal destruction Collection for reuse
   Good condition Needs Maintenance
   Remarks_____

2. **Gas Collection Wells, Manifolds and Piping**
   Good condition Needs Maintenance
   Remarks_____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   Good condition Needs Maintenance N/A
   Remarks_____

F. Cover Drainage Layer Applicable N/A

1. **Outlet Pipes Inspected** Functioning N/A
   Remarks_____

2. **Outlet Rock Inspected** Functioning N/A
   Remarks_____

G. Detention/Sedimentation Ponds Applicable N/A

1. **Siltation** Areal extent_____ Depth_____ N/A
   Siltation not evident
   Remarks_____

2. **Erosion** Areal extent_____ Depth_____
   Erosion not evident
   Remarks_____

3. **Outlet Works** Functioning N/A
   Remarks_____

4. **Dam** Functioning N/A
   Remarks_____

H. Retaining Walls Applicable (N/A)

1. **Deformations** Location shown on site map Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____

2. **Degradation** Location shown on site map Degradation not evident
   Remarks_____

I. Perimeter Ditches/Off-Site Discharge Applicable (N/A)

1. **Siltation** Location shown on site map Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Vegetative Growth** Location shown on site map N/A
   Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____

3. **Erosion** Location shown on site map Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Discharge Structure** Functioning N/A
   Remarks_____

VIII. VERTICAL BARRIER WALLS Applicable (N/A)

1. **Settlement** Location shown on site map Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Performance Monitoring** Type of monitoring_____
   Performance not monitored
   Frequency_____ Evidence of breaching
   Head differential_____
   Remarks_____

IX. GROUNDWATER/SURFACE WATER REMEDIES Applicable (N/A)

A. Groundwater Extraction Wells, Pumps, and Pipelines Applicable N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   Good condition All required wells properly operating Needs Maintenance N/A
   Remarks_____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   Good condition Needs Maintenance
   Remarks_____

3. **Spare Parts and Equipment**
   Readily available Good condition Requires upgrade Needs to be provided
   Remarks_____

B. Surface Water Collection Structures, Pumps, and Pipelines Applicable (N/A)

1. **Collection Structures, Pumps, and Electrical**
   Good condition Needs Maintenance
   Remarks_____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   Good condition Needs Maintenance
   Remarks_____

3. **Spare Parts and Equipment**
   Readily available Good condition Requires upgrade Needs to be provided
   Remarks_____

C. Treatment System Applicable (N/A)

1. **Treatment Train** (Check components that apply)
   - Metals removal — Oil/water separation — Bioremediation
   - Air stripping — Carbon adsorbers
   - Filters_____
   - Additive (*e.g.*, chelation agent, flocculent)_____
   - Others_____
   - Good condition — Needs Maintenance
   - Sampling ports properly marked and functional
   - Sampling/maintenance log displayed and up to date
   - Equipment properly identified
   - Quantity of groundwater treated annually_____
   - Quantity of surface water treated annually_____

   Remarks_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
   N/A — Good condition — Needs Maintenance

   Remarks_____

3. **Tanks, Vaults, Storage Vessels**
   N/A — Good condition — Proper secondary containment — Needs Maintenance

   Remarks_____

4. **Discharge Structure and Appurtenances**
   N/A — Good condition — Needs Maintenance

   Remarks_____

5. **Treatment Building(s)**
   N/A — Good condition (esp. roof and doorways) — Needs repair
   Chemicals and equipment properly stored

   Remarks_____

6. **Monitoring Wells** (pump and treatment remedy)
   Properly secured/locked — Functioning — Routinely sampled — Good condition
   All required wells located — Needs Maintenance — N/A

   Remarks_____

D. Monitoring Data

1. Monitoring Data
   Is routinely submitted on time — Is of acceptable quality

2. Monitoring data suggests:
   Groundwater plume is effectively contained — Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
   Properly secured/locked Functioning Routinely sampled Good condition
   All required wells located Needs Maintenance N/A
   Remarks_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedy is functioning as designed and in compliance with the ROD and design documents.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

O&M is adequate and sufficient for the OU.

C. Early Indicators of Potential Remedy Problems

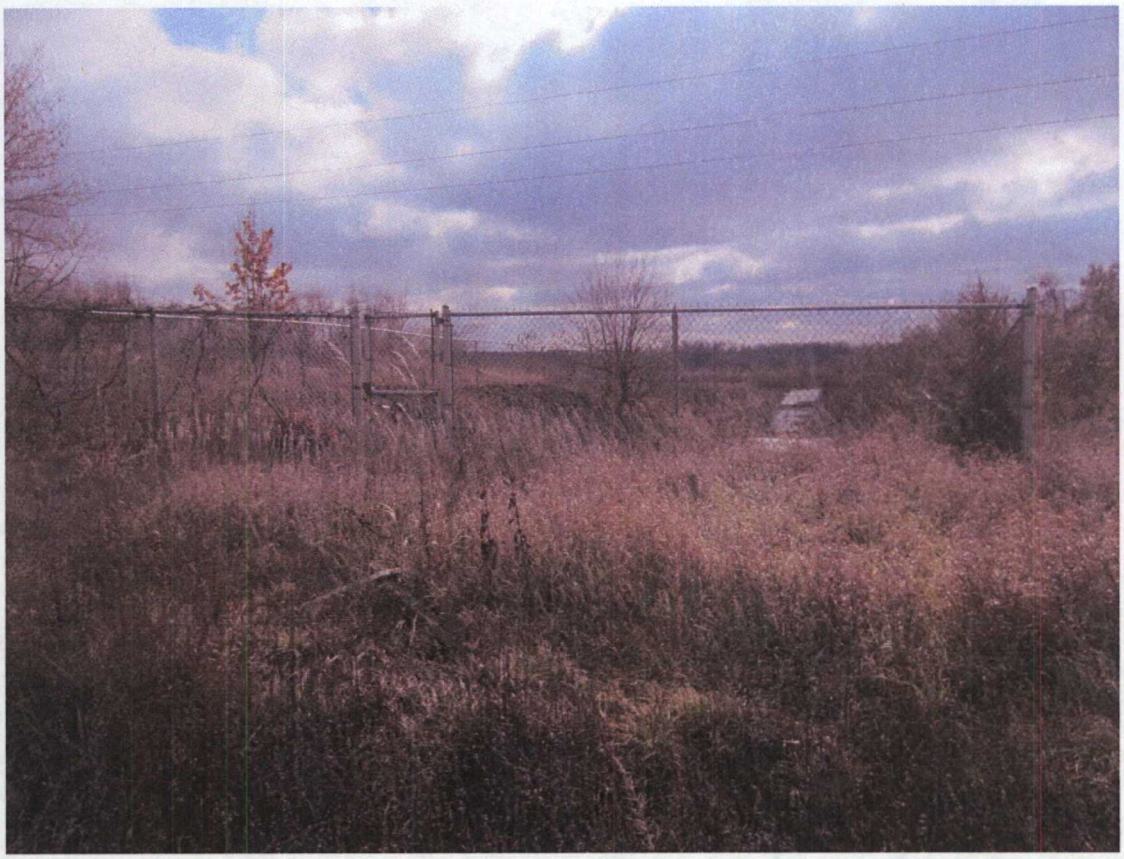
Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

APPENDIX E

PHOTOGRAPHS

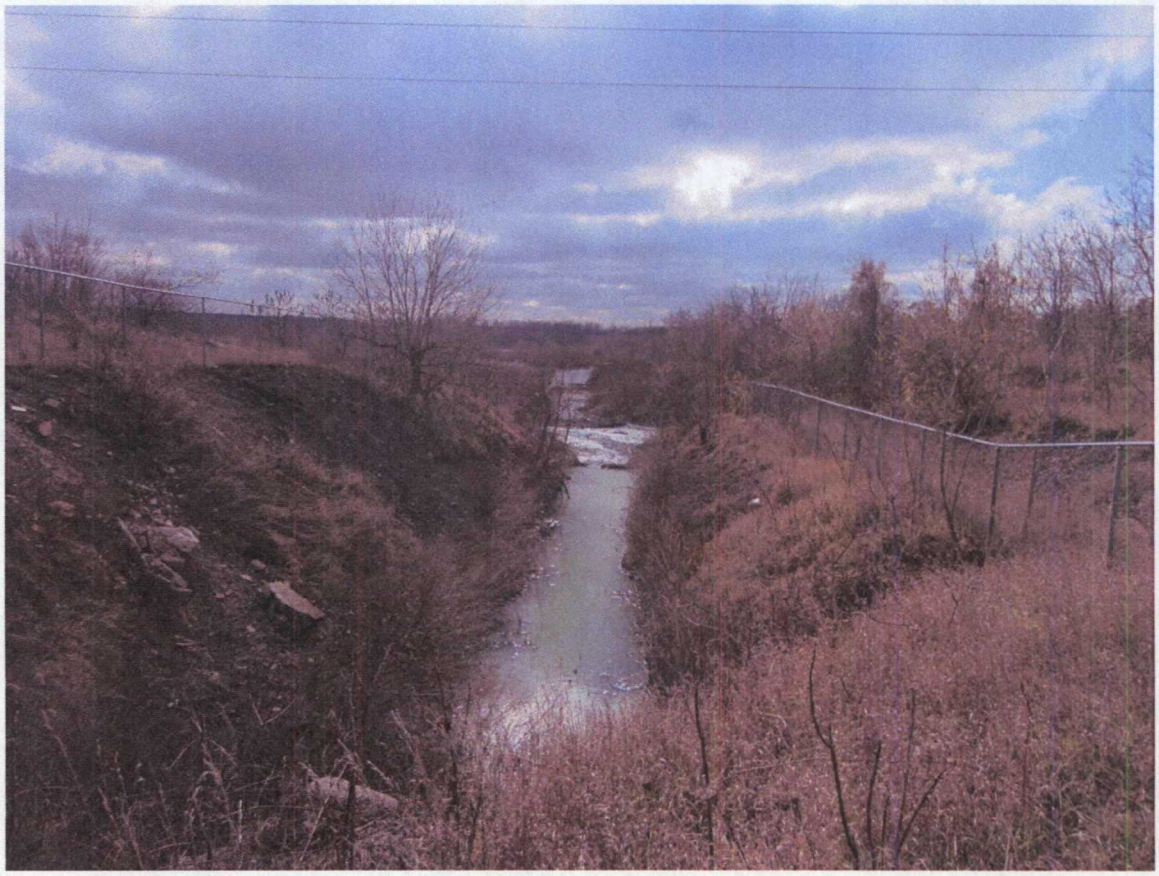


Fence at the head of the South Ditch.

November 13, 2014

View of South Ditch looking south toward Lake DePue.

November 13, 2014.

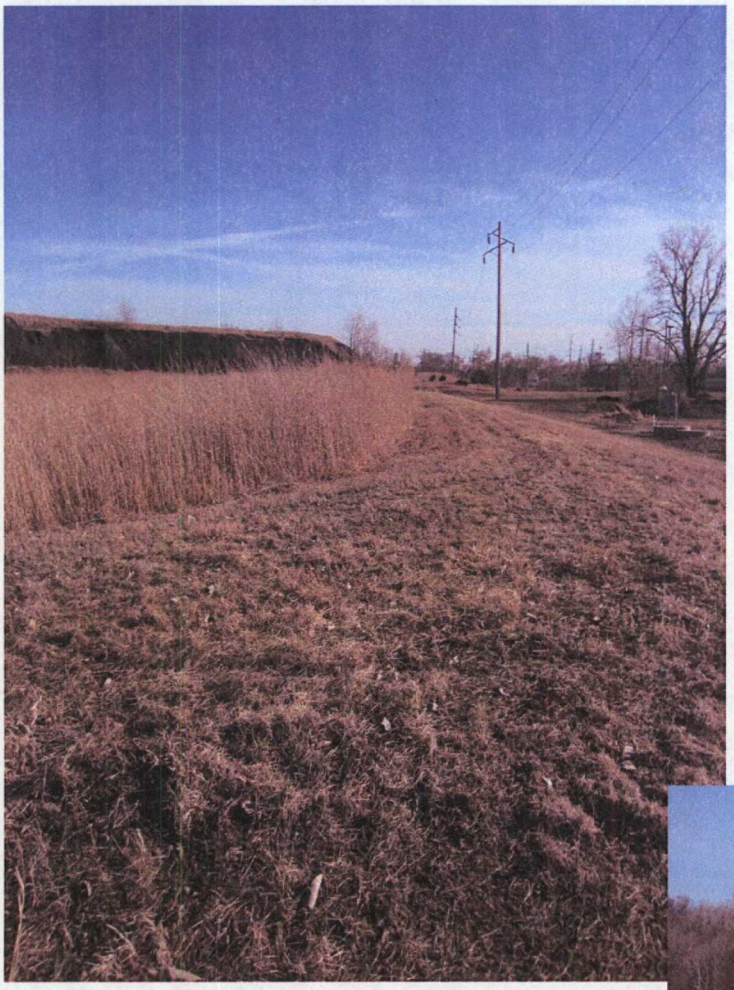


Lift Station

April 1, 2015

Interim Water Treatment Plant ((WTP)

April 1, 2015



CAMU, northwest corner berm

Below, lift station for CAMU

April 1, 2015

APPENDIX F

RECORD OF INTERVIEWS

Site Name:	New Jersey Zinc/Mobil Chemical
EPA ID No.:	ILD062340641
Subject:	FYR, South Ditch and CAMU
Time:	9:30 – 9:48 AM, Central
Date:	February 9, 2015
Type:	Telephone, conference call
Incoming/Outgoing:	Outgoing
Contact made by:	Charlene Falco, Project Manager, Illinois Environmental Protection Agency

Individual contacted and contact information: PRPs and their representatives; see below.

The following individuals were on the conference call:

Steve Weberski
Plant Operator
Environ International Corporation
815-447-2155
sweberski@environcorp.com

Ryan Keeler
Manager
Environ International Corporation
333 West Wacker Dr., Suite 2700
Chicago, IL 60606
312-288-3833
rkeeler@environcorp.com

Scott Hayter
Principal Consultant
Environ International Corporation
3019 Miller Road
Ann Arbor, MI 48103
734-761-1773
shayter@environcorp.com

Wilmer Reyes
Senior Environmental Engineer
CBS Corporation
20 Stanwix St., 10th Floor
Pittsburgh, PA 15222
412-642-3285
wilmer.reyes@cbs.com

Joseph Abel
Project Developer
ExxonMobil Environmental Services Company
Science 2.2B.282
22777 Springwoods Village Parkway
Spring, TX 77389
832-625-9777
joseph.a.abel@exxonmobil.com

Procedures for ongoing inspection/maintenance of the CAMU?

- S. Weberski
  - Weekly visual inspection of berm surrounding CAMU, also inspect pump station
  - Pump station has 2 pumps, can be cycled at operations panel to confirm they are operating
  - Seasonal mowing of berm, about 1/month
  - Pump pit maintenance based on manufacturer's recommendations

Procedures for ongoing inspection/maintenance of South Ditch fence?

- J. Abel:
  - South Ditch fence is included in monthly fence inspection for entire site, results documented in monthly reports. AMEC performs weekly inspection of roadway, past South Ditch and down to the river. Have found no evidence of debris disposal.

- I mentioned that the 2010 FYR includes photos of the South Ditch gate with a small sign on it, and that the sign is no longer present. I asked if anyone recalled what the sign was. No one was aware of it.

Any changes to procedures for maintenance of lift station since 2010, last FYR report?

- S. Weberski:
  - Pumps are changed out as needed; one was changed out in 2014.
  - Since about three years ago, have been using a vac. truck to remove mud and muck that accumulates in the bottom of the collection pits. If this material accumulates, it has the potential to restrict piping, take up space. The material is removed and dumped in sump and is processed along with other sump contents. Done about 1/year, in summer.

Any access to South Ditch by unauthorized people?

- J. Abel:
  - No access has been noted by tresspassers or unauthorized people. No increase in trash or debris. Foot traffic evident on the road.

Aware of any community concerns about the South Ditch or CAMU?

S. Weberski:
- No one in the community has said anything to him about these or any other aspects of the site.

Anything else anyone would like to contribute regarding the South Ditch or CAMU?

- W. Reyes:
  - Interested to see a copy of the FYR for comment.
- I indicated that guidance suggests we can attach PRP comments to the report, and I will confirm at what stage that occurs.

Call end